



Plastic in the oceans





Think-Pair-Share

Think about your own life; how much plastic do you use on a daily basis?

- Bags
- Buttons
- Shampoo bottles
- Light switches
-
-
-
-



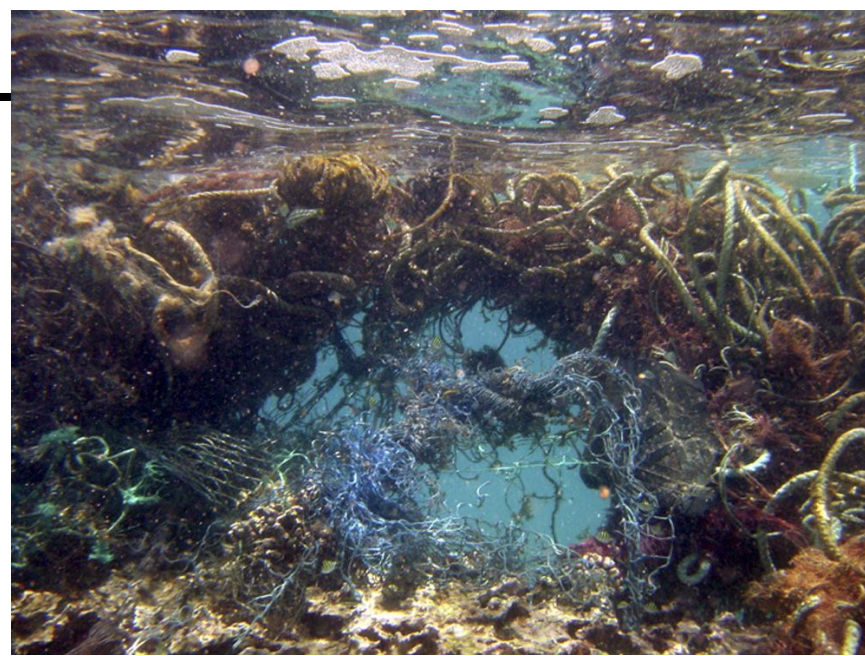


Despite these obvious uses, plastic is a problematic material for the environment.

Why?

Plastic takes a very long time to break down - and in many cases never completely degrades - this creates a major environmental issue.

One of the places where you can see the impact of the disposal of plastic can be found in the Pacific Ocean. Environmentalists call it the [Great Pacific Garbage Patch](#).



• There is an estimated 200 million tons of plastic littering our oceans.

• The majority of this plastic debris ultimately finds its way to one of these massive swirling gyres.

• The largest of the oceanic gyres is the Great Pacific Garbage Patch.

• In parts of the Great Pacific Garbage Patch, there are over 2 million pieces of plastic per square mile of ocean.

• While plastic is not biodegradable, it is photodegradable. Sunlight breaks it down into ever-smaller pieces known as microplastics.

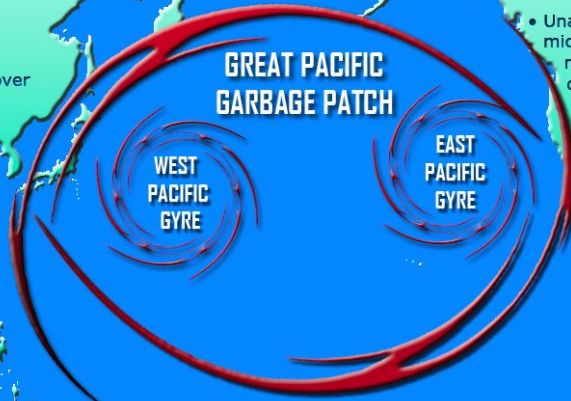
• Over 90% of plastic pollution is made up of microplastics smaller than your fingernail.

• These microplastics often absorb highly toxic chemicals like DDT & PCB.

• Unable to distinguish microplastics from food, many animals starve to death, their bellies choked with plastic; others survive just long enough to contaminate our food chain

• Hindered by a stale way of thinking, gyre cleanup has been virtually nonexistent. Thanks to recent innovations in science and technology, hope is on the horizon.

• Our oceans could well be void of life within the next two generations if nothing is done to stem this.



DECOMPOSITION RATES

Banana peel: 2-3 wks
Paper: 5-10 wks
Cigarette butt: 10-15 yrs
Aluminum can: 200-500 yrs
Glass bottle: 1,000,000 yrs
Styrofoam: never *
Plastic bottle: never *
Fishing line: never *
Plastic bag: never *

* Plastic is not biodegradable



A collection of marine debris, including a large white bucket, a rope, and various plastic fragments, set against a dark background.

sky news

The Great Pacific Garbage Patch



Activity: Plastic Oceans

1. Why do you think plastic is such a widely used product?
 - a.
 - b.

 2. According to the sources, why is plastic such a problem for the world's oceans and seas?
-



Origin and Purpose

What is meant by the origin and purpose of sources?

In I&S we often refer to different sources of information in terms of their origin and purpose.

Origin - What is the name of source? Who made or wrote it? When was it made? Where was it created?

Purpose - Why was the source created? What is its intention? Who is it for?



SOURCE A

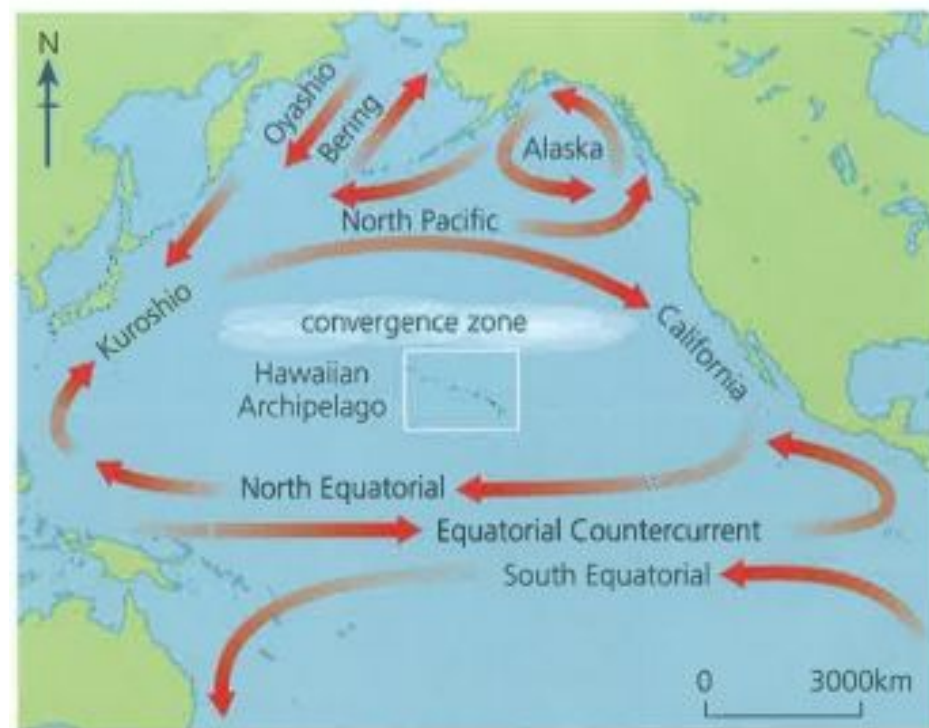
Account by Captain Charles Moore, discoverer of the Great Pacific Garbage Patch, in an article for *Natural History* magazine in 2003

'So on the way back to our home port in Long Beach, California, we decided to take a shortcut through the gyre, which few seafarers ever cross. Fishermen shun it because its waters lack the nutrients to support an abundant catch. Sailors dodge it because it lacks the wind to propel their sailboats.

'Yet as I gazed from the deck at the surface of what ought to have been a pristine ocean, I was confronted, as far as the eye could see, with the sight of plastic.

'It seemed unbelievable, but I never found a clear spot. In the week it took to cross the subtropical high, no matter what time of day I looked, plastic debris was floating everywhere: bottles, bottle caps, wrappers, fragments. Months later, after I discussed what I had seen with the oceanographer Curtis Ebbesmeyer, perhaps the world's leading expert on flotsam, he began referring to the area as the "eastern garbage patch".'

SOURCE B

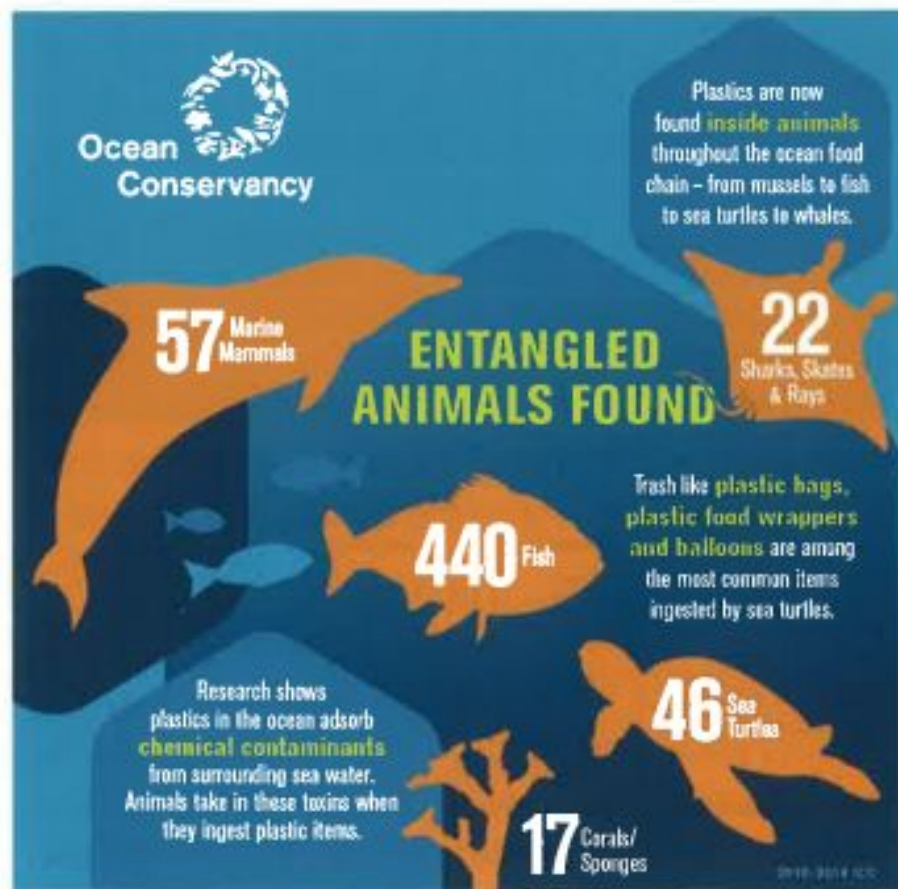


■ **Figure 1.8** The location of the Great Pacific Garbage Patch (convergence zone) and tidal currents

SOURCE C

Extract from the website of the National Resources Defense Council (NRDC), an environmental action group

'Plastic pollution affects every waterway, sea and ocean in the world. When we damage our water systems, we're putting our own well-being at risk. This pollution also has huge costs for taxpayers and local governments that must clean this trash off of beaches and streets to protect public health, prevent flooding from trash-blocked storm drains, and avoid lost tourism revenue from filthy beaches.'



■ **Figure 1.9** Top ten items found during the 2012 International Coastal Clean-up (data from Ocean Conservancy)

Value and Limitations

Here you are expected to judge how useful the source is to an historian or other academic studying this topic.

Value

- Does the author represent a particular 'side' of a controversy or event? Are there any signs of bias? (Origin)
- Is it a primary source? An eyewitness account? (Origin)
- Can you trust the author? Did they have a motive? (Purpose)
- A secondary source. Who are the readers? Is it thoroughly researched? (Purpose & Origin)



Limitations

- Does the author have personal involvement in the event or topic? (Origin)
- Who produced it? When? Other events that might have influenced the author? (Origin)
- What type of source is it? Primary or secondary? (Origin)
- Why was it produced? Propaganda? To incite a reaction? A defence? An accusation? (Purpose)



OPCVL - Analysing sources

Origin	Purpose	Content	Value	Limitation
<p>Who? Who produced the source (origin)?</p> <p>When? When was it produced (origin)? What prompted the author to write this piece? What event led to its publication or development?</p> <p>Where? Where was it produced (origin)?</p>	<p>Why? What is the source's purpose?</p> <p>For Whom? Who was the intended audience of the source</p>	<p>What is the document saying?</p> <p>What information is in the source?</p>	<p>What does it say? What can we as historians learn from this source (content)?</p> <p>Is it an eyewitness account? (Origin)</p> <p>Was it produced to inform? (Purpose)</p>	<p>What does it not say? Is there anything missing from the source (content)?</p> <p>Can we trust the author (origin)?</p> <p>Is it propaganda or was it staged (purpose)?</p>